Attorney Dkt.
P56980

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Hyung-Bok LEE

Serial No.:	10/728,850	Examiner:	A. Boateng
Filed:	8 December 2003	Art Unit:	2838
For:	COMPACT SAFETY DEVICE FOR A POUCH-TYPE SECONDARY BATTERY UNIT HAVING MANY INDIVIDUAL BATTERIES		

Appeal No._____

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ATTENTION: Board of Patent Appeals and Interferences

APPELLANT'S REPLY BRIEF (37 CFR §41.41)

This reply brief is in response to the Examiner's Answer mailed 28 January 2008, and is in furtherance of the Notice of Appeal filed in this case on 5 June 2007.

REPLY BRIEF

I. STATEMENT OF REAL PARTY IN INTEREST

Pursuant to 37 CFR **§41.37**(c)(1)(i) the real party in interest is:

SamSung Electronics Co., Ltd.
416 Maetan-dong, Yeongtong-gu,
Suwon-si, Gyeonggi-do,
Republic of Korea

II. RELATED APPEALS AND INTERFERENCES

Pursuant to 37 CFR **§41.37**(c)(1)(ii), there are no appeals nor interferences known to the Appellant, the Appellant's legal representative, or the Assignee (real party of interest) which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-11, 13-17, 19 and 20 are pending, finally rejected and appealed herein. Claims 12 and 18 were canceled.

IV. STATUS OF AMENDMENTS FILED AFTER FINAL REJECTION

No amendment has been made after the final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1

Claim 1 is directed towards a pouch-type secondary battery unit, comprising, as shown in

FIGS. 3A and 3B:

a first secondary battery cell (20) comprising a first secondary battery body (25) and a first case (24), the first secondary battery body being disposed inside the first case, the first secondary battery cell further comprising a first positive electrode (26) terminal and a first negative electrode (28) terminal perforating out from said first case;

a second secondary battery cell (30) comprising a second secondary battery body (35) and a second case (34), the second secondary battery body being disposed within the second case, the second secondary battery cell further comprising a second positive electrode terminal (36) and a second negative electrode terminal (38) perforating out from said second case; and

a safety circuit board (40) disposed in an external void (49) within said battery unit, said external void being defined as being in between the first and second secondary battery cells, the safety circuit being electrically connected to the first and second positive electrode terminals and to the first and second negative electrode terminals.

Specification

[0030] FIGS. 3A and 3B illustrate a battery unit 10 according to the first embodiment of the present invention. Referring to FIGS. 3A and 3B, the battery unit 10 has a first and second pouch-type secondary battery cells 20 and 30, and a safety circuit board 40, which is installed in a space between the first and second secondary battery cells 20 and 30. Safety circuit board 40 electrically connects first and second positive electrode terminals 26 and 36 and first and second negative electrode terminals 28 and 38 of cells 20 and 30 together.

[0031] The first and second secondary battery cells 20 and 30 are made up of first and second cases 24 and 34, respectively. The first and second cases 24 and 34 respectively are made up of first and

second case bodies 22 and 32, which are formed with first and second spaces 21 and 31 with a predetermined depth, and first and second case covers 23 and 33, which are coupled with the first and second case bodies 22 and 32 to seal the first and second spaces 21 and 31. Here, the first and second cases 24 and 34 have a flexible structure by coating a metal foil, for example, an aluminum foil, with a composite resin material, but is not limited thereto. As illustrated in FIGS. 3A and 3B, battery unit 10 has two battery (or cell) bodies 25 and 35, and two cases 24 and 34, respectively, one case for each battery body.

[0035] External void 49 is really a space that is external to the cases and is between the cases when the cases are stacked onto each other as in FIG. 3B. External void 49 is external to any of the cases but is located between two adjoining cases. Safety circuit board 40 is disposed within external void 49. Because safety circuit board 40 is within external void 49, safety circuit board 40 does not add any volume or bulk to battery unit 10.

Claim 2

Claim 2 depends from claim 1, wherein the first and second cases each comprise:

a case body (22 and 32) having a space (21 and 31) for accommodating one of the first and the second battery bodies; and

case cover (23 and 33) coupled to the case body to seal the battery body contained within the case body.

Specification

[0031] The first and second secondary battery cells 20 and 30 are made up of first and second cases 24 and 34, respectively. The first and second cases 24 and 34 respectively are made up of first and

second case bodies 22 and 32, which are formed with first and second spaces 21 and 31 with a predetermined depth, and first and second case covers 23 and 33, which are coupled with the first and second case bodies 22 and 32 to seal the first and second spaces 21 and 31.

Claim 3

Claim 3 depends from claim 2, wherein each case body comprises a flanged portion (22a and 32a), the positive and negative electrode terminals perforating the respective case at the flanged portion of the case body.

Specification

[0034] Meanwhile, the safety circuit board 40 is positioned between the interconnected first and second battery cells 20 and 30 and connects with the first and second positive electrode terminals 26 and 36 and the first and second negative electrode terminals 28 and 38. Preferably, the safety circuit board 40 is installed between a flange portion 22a of the first case body, from which the first positive and negative electrode terminals extend outward, and a flange portion 32a of the second case body, from which the second positive and negative electrode terminals extend outward. This way, the inclusion of safety circuit board 40 does not add to the overall size or volume of the battery unit 10.

Claim 5

Claim 5 depends from claim 1, claiming that the first and second battery bodies being helically wound positive and negative electrode plates.

Specification

[0036] The first embodiment thus far has been described in terms of using the stacked electrode plates of FIG. 1 as the battery bodies 25 and 35 in battery unit 10. However, this invention is not limited thereto. Alternatively, the helically wound battery bodies 55 and 56 of FIG. 2 can be used in the first embodiment instead of the stacked electrode battery bodies 25 and 35 of FIG. 1. Also, one battery body may be stacked and the other may be helically wound. Thus, the arrangement of FIGS. 3A and 3B may mix or match stacked or helically wound batteries.

Claim 6

Claim 6 is directed towards a pouch-type secondary battery unit (50), comprising as shown in Figs. 5A and 5B:

a case (51) comprising a case body (52) having a plurality of spaces (53 and 54), each one of said plurality of spaces being spaced apart from each other by a predetermined distance, said case further comprising a case cover (57) extending from a side of the case body and coupled with the case body to seal all the plurality of spaces, wherein the case cover is folded such that the spaces are stacked on top of each other;

a plurality of battery cells, each battery cell having a battery body (55 and 56) and two electrode terminals (55a and 55b; 56a and 56b), each battery body being disposed in respective ones of said plurality of spaces, each of said battery bodies having positive and negative electrode terminals (55a and 55b; 56a and 56b) extending outward through the case; and

a safety circuit board (40), disposed in an external void (59) defined by the folding of the case cover, the safety circuit board being connected to each of said positive electrode terminals and

the negative electrode terminals of each of said plurality of battery cells.

Specification

[0038] FIGS. 5A and 5B illustrate a pouch-type secondary battery unit 50 according to a third embodiment of the present invention. Referring to FIGS. 5A and 5B, the pouch-type secondary battery unit 50 has only a single case 51 and first and second battery bodies 55 and 56. In FIGS. 5A and 5B, helically wound batteries 55 and 56 are illustrated, but stacked type batteries of FIG. 1 may instead be used. In addition, one of the battery bodies may be helically wound and the other may be stacked.

[0039] The case 51 has a case cover 57 and a case body 52, which is formed with two spaces 53 and 54 (FIG. 5A), which are spaced apart from each other by a predetermined distance. The first battery body 55 has first positive and negative electrode terminals 55a and 55b and the second battery body 56 has second positive and negative electrode terminals 56a and 56b. The battery bodies 55 and 56 are inserted into the respective spaces 53 and 54 of the case 51.

[0040] The case body 52 is coupled with the case cover 57 to seal the spaces 53 and 54. The case body 52 and the case cover 57 may be formed to have an integral structure. The secondary battery unit 50 is folded (FIG. 5B) in such a manner that protruded outer surfaces of the spaces 53 and 54 of the case body 52 come in contact with each other and form a external void 59 between the electrode terminals 55a, 55b, 56a, 56b and between the opposite portions of the folded cover 57. Unlike spaces 53 and 54, external void 59 is not sealed within case 51. Instead, external void 59 is formed between separate folded sections of case 51, each section containing a separate pouch type battery cell. External void 59 is really a space that is external to the case and is disposed between

adjoining sections of the case when the case is folded onto itself as in FIG. 5B. In this external void 59, a safety circuit board 40 can be positioned as illustrated in FIG. 5B. As illustrated in FIG. 5B, because safety circuit board 40 is within external void 59 of battery unit 50, safety circuit board 40 does not add any volume or bulk to battery unit 50. In this case, the first and second positive electrode terminals 55a and 56a and the first and second negative electrode terminals 55b and 56b are connected to a signal line of the safety circuit board 40. Preferably, the first and second positive electrode terminals 55a and 56a face each other and the first and second negative electrode terminals 55b and 56b face each other. The battery bodies 55 and 56 may be the same as battery bodies 55 and 56 in FIG. 2 or may be instead like battery bodies 25 and 35 in FIG. 1.

Claim 9

Claim 9 depends from claim 6, claim 9 claiming each of the battery bodies being helically wound positive and negative electrode plates.

Specification

[0029] The first and second battery bodies 55 and 56 may be formed by helically winding strip-shaped positive and negative electrode plates, as illustrated in FIG. 2. (Page 8, lines 2-3)

Claim 10

Claim 10 is directed towards a pouch type battery unit (80), comprising, as shown in Fig. 6 (also see Claim 6, Figs 5A and 5B and paragraphs [0038] through [0040], above):

a case (70) comprising a case body (71) and a cover (72), the case body being attached to the cover, said case body comprising a plurality of spaces (73);

a plurality of battery bodies, each one being disposed in corresponding ones of said plurality of spaces, each of said battery bodies having two electrode terminals (74) perforating said case body; and

a safety device (40) electrically connected to said terminals of said battery bodies, said case body having a flanged portion that mates with said cover, said safety device being disposed in between two separate sections of said flanged portion when said case is folded onto itself so that each of said plurality of battery bodies are stacked on top of each other.

Specification

[0041] FIG. 6 illustrates a pouch-type secondary battery unit 80 according to the fourth embodiment of the present invention. Referring to FIG. 6, a case 70 is made up of a case body 71 and a case cover 72. The case body 71 is formed with in-line multiple spaces 73. Battery bodies (not illustrated) with exposed electrode terminals 74 are disposed within respective spaces 73. The case 70 is folded in such a manner that the battery bodies overlap each other forming voids therebetween. A safety circuit board 40 is installed in a void defined among the spaces 73 containing battery bodies. As with the other embodiments, the battery bodies may be helically wound as in FIG. 2 or stacked as in FIG. 1 or a combination thereof.

Claim 14

Claim 14 depends from claim 10, and requires each of said plurality of battery bodies being comprised of electrode plates being helically wound.

Specification

[0041] As with the other embodiments, the battery bodies may be helically wound as in FIG. 2.

Claim 15

Claim 15 depends from claim 10, and requires each of said plurality of battery bodies being electrically connected to each other in seriatim.

Specification

[0029] In this present invention, the term "battery unit" means a group of individual batteries (or cells) interconnected in parallel or in series. (Page 8, lines 4-5)

Claim 16

Claim 16 depends from claim 10, and requires each of said plurality of battery bodies being electrically connected to each other in parallel.

Specification

[0029] In this present invention, the term "battery unit" means a group of individual batteries (or cells) interconnected in parallel or in series. (Page 8, lines 4-5)

Claim 17

Claim 17 is directed towards a pouch type secondary battery unit (10), comprising, as shown in FIGS. 3A and 3B:

a plurality of secondary battery cells (20 and 30), each battery cell comprising a battery body (25 and 35) disposed in a sealed case (24 and 34), each battery cell further comprising a pair of electrode terminals (26 and 28; 36 and 38) of opposite electrical polarity electrically connected to said battery body and perforating said case; and

a safety circuit board (40) being electrically connected to the terminals of each of said plurality of battery cells, said safety device being disposed in such a way as to not add to the size of the battery unit, each of said plurality of secondary battery cells being stacked on top of each other, each of said cases having a flanged portion (22a and 32a) protruding outward from the battery body, wherein a void (49) is formed in between flanged portions of adjacent stacked battery cells, said void being external to said sealed case, said safety device being disposed within said void.

Specification

[0030] FIGS. 3A and 3B illustrate a battery unit 10 according to the first embodiment of the present invention. Referring to FIGS. 3A and 3B, the battery unit 10 has a first and second pouch-type secondary battery cells 20 and 30, and a safety circuit board 40, which is installed in a space between the first and second secondary battery cells 20 and 30. Safety circuit board 40 electrically connects first and second positive electrode terminals 26 and 36 and first and second negative electrode terminals 28 and 38 of cells 20 and 30 together.

[0031] The first and second secondary battery cells 20 and 30 are made up of first and second cases 24 and 34, respectively. The first and second cases 24 and 34 respectively are made up of first and second case bodies 22 and 32, which are formed with first and second spaces 21 and 31 with a predetermined depth, and first and second case covers 23 and 33, which are coupled with the first and second case bodies 22 and 32 to seal the first and second spaces 21 and 31. Here, the first and second cases 24 and 34 have a flexible structure by coating a metal foil, for example, an aluminum foil, with a composite resin material, but is not limited thereto. As illustrated in FIGS. 3A and 3B, battery unit 10 has two battery (or cell) bodies 25 and 35, and two cases 24 and 34, respectively, one case for each battery body.

[0034] Meanwhile, the safety circuit board 40 is positioned between the interconnected first and second battery cells 20 and 30 and connects with the first and second positive electrode terminals 26 and 36 and the first and second negative electrode terminals 28 and 38. Preferably, the safety circuit board 40 is installed between a flange portion 22a of the first case body, from which the first positive and negative electrode terminals extend outward, and a flange portion 32a of the second case body, from which the second positive and negative electrode terminals extend outward. This way, the inclusion of safety circuit board 40 does not add to the overall size or volume of the battery unit 10.

[0035] External void 49 is really a space that is external to the cases and is between the cases when the cases are stacked onto each other as in FIG. 3B. External void 49 is external to any of the cases but is located between two adjoining cases. Safety circuit board 40 is disposed within external void 49. Because safety circuit board 40 is within external void 49, safety circuit board 40 does not add any volume or bulk to battery unit 10.

Claim 19

Claim 19 depends from claim 17, and requires each of said plurality of battery cells being electrically connected to each other in parallel.

Specification

[0029] In this present invention, the term "battery unit" means a group of individual batteries (or cells) interconnected in parallel or in series. (Page 8, lines 4-5)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-11, 13-17, 19 and 20 are patentable under 35 U.S.C. §102(e) over Nortoft et al. (U.S. Patent No. 6,773,848).

VII. ARGUMENTS

Claims 1-11, 13-17, 19 and 20 were rejected under 35 U.S.C. §102(e) as being anticipated by Nortoft et al. (U.S. Patent No. 6,773,848). The applicant respectfully traverses this rejection for the following reason(s).

Claim 1

Claim 1 calls for, in part, a safety circuit board disposed in an external void within said battery unit, said external void being defined as being in between the first and second secondary battery cells, the safety circuit being electrically connected to the first and second positive electrode terminals and to the first and second negative electrode terminals.

Nortoft discloses a circuit board 5 disposed between first and second secondary battery cells, however Nortoft fails to disclose:

A. an external void within said battery unit, said external void being defined as being in between the first and second secondary battery cells; and

B. a safety circuit board disposed in an external void within said battery unit.

The Examiner has identified what the Examiner considers to be such an external void and

refers us to the gap between cells 1 and 1' in Fig. 2b.

Nortoft discloses that the circuit board 5 is **sandwiched** in between the cells 1 and 1'. In this way, the circuitry on the circuit board is completely protected between the cells. In an alternative arrangement, not illustrated, both cells could be folded on top of the circuit board; again, the circuitry of the board would be protected, though the board itself would have to have a degree of rigidity because its rear surface would be exposed.

Accordingly, there is no external void within said battery unit within which the safety circuit board is disposed. The void in Nortoft is deemed to be an internal void, or internal gap, in the battery unit as a whole. Nortoft's circuit board 5 may extend into the area the Examiner refers to, however, the circuit board 5 is clearly not disposed with that area.

A Random House College Dictionary defines "dispose" (as used in the claim) as "2. to put in a particular or suitable space".

Applicant's Fig. 3B shows an external void 49 in between the two stacked secondary batteries 20/30.

Accordingly, the rejection of claim 1 is deemed to be in error and should not be sustained.

The Examiner's Answer provides reiterates that the space in between the two cells, items 1 and l' (Nortoft's Fig. 1b) is a void that is external to both of the cell, and thus reads on the claimed external void.

As can be seen from Nortoft's illustrations, the space in between the two cells, items 1 and

1' is an **internal** void within Nortoft's battery unit, not an external void within said battery unit.

Claim 2

Claim 2 calls for a case body having a space for accommodating one of the first and the second battery bodies; with the case cover coupled to the case body to seal the battery body contained within the case body.

Here, the Examiner refers us to Nortoft's col. 3, line 65 through col. 4, line 5, which states:

> FIG. 1 shows a pair of flat electrochemical cells 1, 1' connected in series. The cells, which may be lithium-ion batteries or capacitors, are flat cells housed in flexible packages. The exact design structure of the cells is not relevant to the present application, but they may be as described in U.S. Pat. No. 5,445,856, i.e. flat wound cells housed in a thin foil laminate package.

The disclosed "flexible packages", also disclosed as "a thin foil laminate package" are not disclosed as both a case body and a case cover. The "flexible packages" can be deemed equivalent to the claimed case body having a space for accommodating one of the first and the second battery bodies, however there is no disclosed case cover coupled to the case body to seal the battery body contained within the case body.

The Examiner's Answer states "These "flexible packages" are cases with a cover."

It is the Appellant's position that Nortoft's "flexible packages" are cases with sealed ends, and no cover.

The Examiner then argues that the flaps 14 in Fig. 6a of Nortoft correspond to the claimed case cover.

Note, however, that Fig. 6a is not the same battery unit the Examiner referred to with respect to claim1, but instead is a sixth and separate embodiment. The battery unit referred to by the Examiner with respect to claim 1 is illustrated in Figs 1a to 2b of Nortoft, and there is no case cover.

Furthermore, the flaps 14 are part of the cell package cut long. These flaps 14 will overlap end portions of circuit board 5, but do not cover the cells.

Nortoft discloses that by mechanically connecting these flaps 14 to the circuit board, a strong connection between the cell and the circuit board is achieved, so that any loads or bending stresses caused by folding of the cells will be taken by the sealing material, rather than by the cell terminals. This greatly reduces the possibility of the electrical connections between the cells and the circuit board being damaged in the folding operation. The flaps can, for example, be connected to the circuit board by gluing or taping.

Accordingly, it is not disclosed that flaps 14 are coupled to the case body to seal the battery body contained within the case body. Therefore, flaps 14 do not correspond to the claimed case cover.

In response to the foregoing, the Examiner's Answer refers us to Nortoft's col. 8, lines 21-54 and argues that the "flaps correspond to appellants claimed cover because the flaps cover the electrochemical cell provides housing for them."

A review of particular section of Nortoft cited by the Examiner finds no disclosure to support the Examiner's argument.

Nortoft clearly discloses that the sheet material forming the flexible package **is folded around the wound cell precursor** so as to form a seal 11 at the bottom end, a seal 12 along one flat side of the cell and a seal 13 at the top end, where the cell terminals 2, 2' or tabs emerge. The seals

are closed in a conventional fashion, using heat sealing. And at the terminal end of each cell the material of the cell package **extends beyond the seal 13** enclosing the cell terminals and is then cut along each side to provide two flaps 14.

Clearly these two flaps 14 do not seal the battery body contained within the case body, since that is the job of seal 13, seal 12 and seal 11. The two flaps do not even exist until the sheet material is cut along each side **after** forming seal 13.

Accordingly, the rejection of claim 2 is deemed to be in error and should not be sustained.

Claim 3

Claim 3 calls for each case body to comprise a flanged portion, the positive and negative electrode terminals perforating the respective case at the flanged portion of the case body.

Here the Examiner has merely referred to Figs. 1b-2b of Nortoft, without identifying that area of the case body deemed to be a flanged portion.

Looking to Figs. 1b-2b, we find no element resembling a "flange": A protruding rim, edge, rib, or collar, used to strengthen an object, hold it in place, or attach it to another object.

There is a protruding rim illustrated, however, the case body is disclosed as being flexible and formed of a thin foil laminate. Accordingly, the protruding rim does not strengthen the case body. Nor is it disclosed that the protruding rim is used to hold it in place, or attach it to another object.

Therefore, the protruding rim, which is actually the laminate's sealing point, does not meet any known definition of a "flange".

The Examiner identifies the same portion of Nortoft's case the applicant refers to as a rim. The Examiner does not traverse the Applicant's definition of "flange", nor does the Examiner suggest that Nortoft's rim meets the well known definition of a flange.

The Examiner's Answer states "The flanged portion [rim] is also shown in figure 1b wherein the electrodes protrude from the edge, holds the electrodes in place and allows the cell to be attached to another cell."

There is no evidence that suggest that Nortoft's rim holds the electrodes in place and allows the cell to be attached to another cell. It is clear from the rest of Nortoft's disclosure that if the sheet material were sealed without the protruding rim, the electrodes would still be held in place.

Also, it is not the rim which is used to connect two cells, but it is instead the electrodes that are used to connect two cells.

Accordingly, the rejection of claim 3 is deemed to be in error and should not be sustained. See claim 7 also.

Claim 5

Claim 5 requires the first battery bodies be helically wound positive and negative electrode plates.

Here the Examiner refers us to Nortoft's Fig. 4e. Fig. 4e is a schematic perspective and partly sectional view of the arrangement of FIG. 4a, in a folded condition; and Fig. 4a is an exploded view of an arrangement of electrochemical cells according to a fourth embodiment of the invention.

There is no disclosure that the electrochemical cells arehelically wound positive and negative

electrode plates, and Fig. 4e does not illustrate helically wound positive and negative electrode plates.

The Examiner's Answer continues to maintain that Nortoft's Figs. 4e and 5d illustrate that the electrochemical cells are wound helically by the positive and negative electrode plates.

Note that one cannot even see any positive and negative electrode plates of Nortoft's electrochemical cells in Figs. 4e and 5d, so it is unclear what the Examiner is looking at, but clearly there are no positive and negative electrode plates illustrated in Figs. 4e and 5d.

The positive and negative symbols in Figs. 4e and 5d are indicative of the charge in the electrode terminals protruding from the cells.

Accordingly, the rejection of claim 5 is deemed to be in error and should not be sustained. See claims 9 and 14 also.

Claim 6

Claim 6 calls for a case comprising a case body having a plurality of spaces, each one of said plurality of spaces being spaced apart from each other by a predetermined distance, said case further comprising a case cover extending from a side of the case body and coupled with the case body to seal all the plurality of spaces, wherein the case cover is folded such that the spaces are stacked on top of each other.

Here the Examiner refers to Nortoft's Figs 2 and.3a; and col. 3, line 65 through col. 4, line 5. Nortoft's col. 3, line 65 through col. 4, line 5, state:

> FIG. 1 shows a pair of flat electrochemical cells 1, 1' connected in series. The cells, which may be lithium-ion batteries or capacitors, are flat cells housed in flexible packages. The exact design structure of the cells is not relevant to the present application, but they may be as described in U.S. Pat. No. 5,445,856, i.e. flat wound cells housed in a thin foil laminate package.

The disclosed "flexible **packages**" of Nortoft's Figs 2 and.3a are not disclosed as a case body having a plurality of spaces. The flexible packages are separate packages, and thus are deemed to be separate case bodies, not a case body having a plurality of spaces.

Additionally, there is no disclosed case cover, and certainly no case cover coupled with the case body to seal all the plurality of spaces. Although the separate cells are stacked in Nortoft, there is no case cover folded such that the spaces are stacked on top of each other.

In the Examiner's Answer the Examiner refers us to Nortoft's col. 8, lines 21-54 and Figs. 6a-6d.

FIG. 6a is a schematic perspective view of a sixth embodiment of Nortoft's invention; FIG. 6b is a perspective view of the arrangement of FIG. 6a, in a folded condition; and FIGS. 6c and 6d are enlarged details of the perspective view of FIG. 6b.

Nortoft's col. 8, lines 21-54 describe, in particular, Fig. 6a.

Accordingly, Nortoft's col. 8, lines 21-54 and Figs. 6a-6d do not support the rejection which relies on Nortoft's Figs 2 and.3a; and col. 3, line 65 through col. 4, line 5.

Additionally, as can be seen from Figs. 6a-6d, Nortoft provides a cell unit comprising three flat electrochemical cells, wherein each of the cells are sealed in respective envelopes formed from separate sheets of material. There is no case cover, and certainly no case cover coupled with the case body to seal all the plurality of spaces. Although the separate cells are stacked in Nortoft, there is

no case cover folded such that the spaces are stacked on top of each other.

Accordingly, the rejection of claim 6 is deemed to be in error and should not be sustained.

Claim 6 also calls for a safety circuit board, disposed in an external void defined by the folding of the case cover.

Here the Examiner refers to a separate embodiment (Fig 6b) from the embodiment of Figs 2-3a applied to the first feature of claim 6.

Nortoft discloses that the circuit board 5 is **sandwiched** in between the cells 1 and 1', see Fig. 6a. In this way, the circuitry on the circuit board is completely protected between the cells. Neither of Figs. 6a or 6b illustrate a case cover extending from a side of the case body and coupled with the case body to seal all the plurality of spaces.

As noted with respect to claim 2, the Examiner then argues that the flaps 14 in Fig. 6a of Nortoft correspond to the claimed case cover.

Note, however, that the flaps 14 will overlap end portions of circuit board 5, but do not cover the cells. Accordingly, it is not disclosed that flaps 14 area case cover extending from a side of the case body and coupled with the case body to seal all the plurality of spaces. Therefore, flaps 14 do not correspond to the claimed case cover.

Accordingly, there is no external void defined by the folding of the case coverwithin which the safety circuit board is disposed. The void in Nortoft is deemed to be an internal void, or internal gap, in the battery unit as a whole. Nortoft's circuit board 5 may extend into the area the Examiner refers to, however, the circuit board 5 is clearly not disposed with that area.

A Random House College Dictionary defines "dispose" (as used in the claim) as "2. to put

in a particular or suitable space".

As argued previously, there is no case cover disclosed in Nortoft. Accordingly, there can be no external void defined by the folding of the case coverThe Examiner's Answer does not provide support for the rejection.

"There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." Scripps clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 18 USPQ2d 1001, 18 USPQ2d 1896 (Fed. Cir. 1991).

Accordingly, the rejection of claim 6 is deemed to be in error and should not be sustained.

Claim 10

Claim 10 also calls for a case comprising a case body and a cover, the case body being attached to the cover, said case body comprising a plurality of spaces and is deemed to not be anticipated by Nortoft for the same reasons as claim 6.

That is, none of Nortoft's figures illustrate said case body comprising a plurality of spaces. All of Nortofts figures illustrate separate flexible packages connected together in some fashion by way of being connected to circuit board 5.

Also see the Applicant's traversal above with regard to claim 6 and Nortoft's flaps 14, wherein it was noted that flaps 14 cover a end portions of circuit board 5, but do not cover the cells.

The Examiner's Answer refers us to Nortoft's col. 3, line 65 through col. 4, line 1 wherein the cells are "housed in flexible packages."

As noted previously, the Appellant already indicated that all of Nortofts figures illustrate

separate flexible packages.

The Examiner's Answer holds that these flexible packages are cases with a cover, and again refers us to flaps 14 in Nortoft's Fig. 6a as the cover.

Nortoft clearly discloses that the sheet material forming each of the flexible packages in Fig. 6a **is folded around the wound cell precursor** so as to form a seal 11 at the bottom end, a seal 12 along one flat side of the cell and a seal 13 at the top end, where the cell terminals 2, 2' or tabs emerge. The seals are closed in a conventional fashion, using heat sealing. And at the terminal end of each cell the material of the cell package **extends beyond the seal 13** enclosing the cell terminals and is then cut along each side to provide two flaps 14.

Clearly these two flaps 14 do not seal the battery body contained within the case body, since that is the job of seal 13, seal 12 and seal 11. In fact, the two flaps do not even exist until the sheet material is cut along each side **after** forming seal 13.

Accordingly, flaps 14 do not form a cover.

Claim 10 also includes, in part, said case body having a flanged portion that mates with said cover, said safety device being disposed in between two separate sections of said flanged portion.

As noted with respect to claim 3, there are no elements of Nortoft's case body having a flanged portion.

Additionally, there is no cover as noted with respect to claims 2 and 6.

Further, there is no disclosure of a flanged portion that mates with said cover, said safety device being disposed in between two separate sections of said flanged portion . In Nortoft, the circuit board 5 is sandwiched between the battery cells. See the traversal of claims 1, 3 and 6.

The Examiner's Answer refers to Nortoft's figure 2b wherein electrodes, item 3' and 2' perforate from the "flanged portions" shown on the sides of the cells, item 1. The rejection of claim 10 relies on the embodiment of Fig. 6a which illustrates the relied upon flaps 14. Accordingly, the Examiner's reliance of Nortoft's Fig. 2b does not support the rejection, nor does Fig. 2b illustrate that the "flanged portion" mates with said cover. Further, Fig. 2b may show portions of a circuit board 5, but does no show a safety device being disposed in between two separate sections of said flanged portion.

Accordingly, the rejection of claim 10 is deemed to be in error and should not be sustained.

Claim 17

Claim 17 is deemed to be patentable over Nortoft for the same reasons discussed above with respect to claim 10 with regard to the claimed features wherein a void is formed in between flanged portions of adjacent stacked battery cells, said void being external to said sealed case, said safety device being disposed within said void..

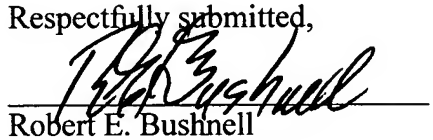
Additionally, it is claimed that said safety device being disposed in such a way as to not add to the size of the battery unit.

Clearly, since the circuit board in Nortoft is sandwiched between the cells 1 and 1', the thickness, thus the size, of the battery is increased.

The Examiner's Answer does not traverse the forgoing argument.

Accordingly, the rejection of claim 17 is deemed to be in error and should not be sustained.

Respectfully submitted,



Robert E. Bushnell
Attorney for Applicant
Reg. No.: 27,774

1522 K Street, N.W.
Washington, D.C. 20005
(202) 408-9040

Folio: P56980
Date: 3/26/08
I.D.: REB/MDP

VIII. APPENDIX

CLAIMS UNDER APPEAL

1. (Previously Amended) A pouch-type secondary battery unit, comprising:

a first secondary battery cell comprising a first secondary battery body and a first case, the first secondary battery body being disposed inside the first case, the first secondary battery cell further comprising a first positive electrode terminal and a first negative electrode terminal perforating out from said first case;

a second secondary battery cell comprising a second secondary battery body and a second case, the second secondary battery body being disposed within the second case, the second secondary battery cell further comprising a second positive electrode terminal and a second negative electrode terminal perforating out from said second case; and

a safety circuit board disposed in an external void within said battery unit, said external void being defined as being in between the first and second secondary battery cells, the safety circuit being electrically connected to the first and second positive electrode terminals and to the first and second negative electrode terminals.

2. (Original) The battery unit of claim 1, wherein the first and second cases each comprise:

a case body having a space for accommodating one of the first and the second battery bodies; and

case cover coupled to the case body to seal the battery body contained within the case body.

3. (Original) The battery unit of claim 2, wherein each case body comprises a flanged portion, the positive and negative electrode terminals perforating the respective case at the flanged portion of the case body.

4. (Original) The battery unit of claim 1, wherein the first battery cell and the second battery cell are positioned so that the first positive electrode terminal is disposed near the second positive electrode terminal and the first negative electrode terminal is disposed near the second negative electrode terminal.

5. (Original) The battery unit of claim 1, wherein the first and second battery bodies being helically wound positive and negative electrode plates.

6. (Previously Amended) A pouch-type secondary battery unit, comprising:

a case comprising a case body having a plurality of spaces, each one of said plurality of spaces being spaced apart from each other by a predetermined distance, said case further comprising a case cover extending from a side of the case body and coupled with the case body to seal all the plurality of spaces, wherein the case cover is folded such that the spaces are stacked on top of each other;

a plurality of battery cells, each battery cell having a battery body and two electrode terminals, each battery body being disposed in respective ones of said plurality of spaces, each of said battery bodies having positive and negative electrode terminals extending outward through the case; and

a safety circuit board, disposed in an external void defined by the folding of the case cover, the safety circuit board being connected to each of said positive electrode terminals and the negative electrode terminals of each of said plurality of battery cells.

7. (Original) The battery unit of claim 6, wherein the case body comprises a flanged portion, the positive and negative electrode terminals extending through the flanged portion.

8. (Original) The battery unit of claim 6, wherein the positive electrode terminals of different battery cells in the battery unit are all aligned with each other and the negative electrode terminals of the different battery cells in the battery unit are all aligned with each other.

9. (Original) The battery unit of claim 6, wherein each of the battery bodies being helically wound positive and negative electrode plates.

10. (Previously Amended) A pouch type battery unit, comprising:

a case comprising a case body and a cover, the case body being attached to the cover, said case body comprising a plurality of spaces;

a plurality of battery bodies, each one being disposed in corresponding ones of said plurality of spaces, each of said battery bodies having two electrode terminals perforating said case body; and

a safety device electrically connected to said terminals of said battery bodies, said case body having a flanged portion that mates with said cover, said safety device being disposed in between two separate sections of said flanged portion when said case is folded onto itself so that each of said

plurality of battery bodies are stacked on top of each other.

11. (Original) The battery unit of claim 10, said cover of said case being folded onto itself so that each of said plurality of battery bodies are stacked on top of each other.

13. (Original) The battery unit of claim 10, each of said plurality of battery bodies being comprised of electrode plates stacked on top of each other and not being wound.

14. (Original) The battery unit of claim 10, each of said plurality of battery bodies being comprised of electrode plates being helically wound.

15. (Original) The battery unit of claim 10, each of said plurality of battery bodies being electrically connected to each other in seriatim.

16. (Original) The battery unit of claim 10, each of said plurality of battery bodies being electrically connected to each other in parallel.

17. (Previously Amended) A pouch type secondary battery unit, comprising:

a plurality of secondary battery cells, each battery cell comprising a battery body disposed in a sealed case, each battery cell further comprising a pair of electrode terminals of opposite electrical polarity electrically connected to said battery body and perforating said case; and

a safety circuit board being electrically connected to the terminals of each of said plurality

of battery cells, said safety device being disposed in such a way as to not add to the size of the battery unit, each of said plurality of secondary battery cells being stacked on top of each other, each of said cases having a flanged portion protruding outward from the battery body, wherein a void is formed in between flanged portions of adjacent stacked battery cells, said void being external to said sealed case, said safety device being disposed within said void.

19. (Original) The battery unit of claim 17, each of said plurality of battery cells being electrically connected to each other in parallel.

20. (Original) The battery unit of claim 17, said safety circuit board being any one of or both of a positive temperature coefficient device and a safety vent.

IX. EVIDENCE APPENDIX

Random House College Dictionary definition of "dispose".

X. RELATED PROCEEDINGS APPENDIX

None.